B. Compensation for Teachers of Hard-to-Fill Subjects and Teachers in Hard-to-Staff Schools

Does evidence suggest that some groups of teachers are more sensitive to differences in pay and working conditions than others?

Yes. Studies of school staffing patterns conducted in California and Texas suggest that teachers are more sensitive to differences in pay when the job is more challenging (Prince, 2003*). In a 2001 Survey Research Institute survey of California teachers, nearly half identified pay and benefits as the most, second most, or third most important factors that they considered when choosing their current jobs. Teachers in high-poverty, high-minority districts were more likely than others to name pay and benefits as important reasons influencing the choice of districts in which they were working (Shields, Humphrey, Wechsler, Riehl, Tiffany-Morales, Woodworth, Young, & Price, 2001).

Kirby, Naftel, and Berends (1999) found that minority teachers in Texas were especially sensitive to differences in pay and working conditions, particularly in high-risk districts where 60 percent or more of the students qualified for free or reduced-price meals. As the researchers pointed out, this finding was not particularly surprising, "given that they are working under what are likely to be rather difficult and underresourced conditions." Minority teacher recruitment and retention is a critical concern in Texas because minority teachers are disproportionately employed in high-poverty districts that serve students with the greatest needs and in districts that also have the most severe staff shortages.

Using data about new teachers from the 1987–88 to 1995–96 school years, Kirby et al. (1999) developed a series of models to estimate how changes in resources and working conditions would affect attrition among different groups of teachers. The variables that they examined were salaries for new teachers; instructional expenditures per pupil; percentages of administrative and support staff; and student-teacher ratios. The researchers found that increases in pay significantly reduce teacher attrition, especially among African-American and Hispanic teachers. A $1,000 increase in beginning teacher salaries reduces teacher turnover by an estimated 2.9 percent overall, but by 5 percent to 6 percent among African-American and Hispanic teachers. Moreover, they found that a $1,000 increase in pay reduces teacher attrition by an estimated 6.2 percent in high-risk districts, compared to1.6 percent in medium-risk districts and 1 percent in low-risk districts.

When Kirby et al. examined tradeoffs among the different variables, they found that increasing salaries and lowering student-teacher ratios would have the greatest effect on attrition, particularly among minority teachers in high-risk districts. Increasing teacher salaries was the most promising of the two options, they argued, cautioning that attempts to lower student-teacher ratios likely would be expensive and difficult to implement and could lead to unintended consequences. The researchers cited California as an example where, after mandatory statewide

class-size reduction polices were enacted in the mid-1990s, the number of uncertified teachers increased sharply because districts were unable to hire enough certified teachers to fill all of the additional teaching positions that were created.

Equally important to policymakers is whether increasing salaries would help reduce attrition of highly-skilled teachers and teachers of hard-to-fill subjects who are highly sought after and difficult to replace. Research about teacher turnover suggests that higher-ability students are less likely to enter public school teaching and that those who do are more likely to exit if they do choose to become teachers (see references in Podgursky, Monroe, & Watson, 2004, including Hanushek & Pace, 1995; Lankford, Loeb, & Wyckoff, 2002; Manski, 1987; Murnane & Olsen, 1990; Murnane, Singer, Willett, Kemple, & Olsen, 1991; Stinebrickner, 2001; and Stinebrickner, 2002).

Moreover, research suggests that attrition of high-ability teachers is greater in mathematics and science than in other teaching fields. Podgursky et al., (2004) maintain that, "in theory, it is possible that non-targeted, across-the-board pay increases could raise average teacher quality in the incumbent workforce if higher ability teachers are more responsive to pay increases."

However, they found that this was not the case. The researchers found little evidence that high-ability teachers, as measured by teachers' own ACT scores, were leaving the profession for higher pay. A noteworthy finding was that for women, one working condition stood out as an important factor in teacher exit decisions: Higher-ability women were more likely to leave teaching if they worked with low-ability colleagues.

In addition, the researchers found that pay increases had the largest effect on turnover among female elementary school teachers. Female mathematics and science teachers, in contrast, were less sensitive to small increases in pay. According to the researchers, "these results suggest that across-the-board increases in the salary schedule (i.e., for all teachers regardless of field) will disproportionately affect turnover of elementary teachers and not teachers in shortage fields." Instead, larger, targeted pay increases would be needed to reduce the attrition of teachers in subject shortage fields, specifically high-ability female mathematics and science teachers.

*Note: A portion of the information in this article is adapted from: Prince, C. (2003). *Higher pay in hard-to-staff schools: The case for financial incentives.* Lanham, MD: Scarecrow Press.

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This synthesis of key research studies was written by:

Cynthia D. Prince, Vanderbilt University; Julia Koppich, Ph.D., J. Koppich and Associates; Tamara Morse Azar, Westat; Monica Bhatt, Learning Point Associates; and Peter J. Witham, Vanderbilt University.

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